User Manual and Parts Book of the Verti-Rake 4500-6000

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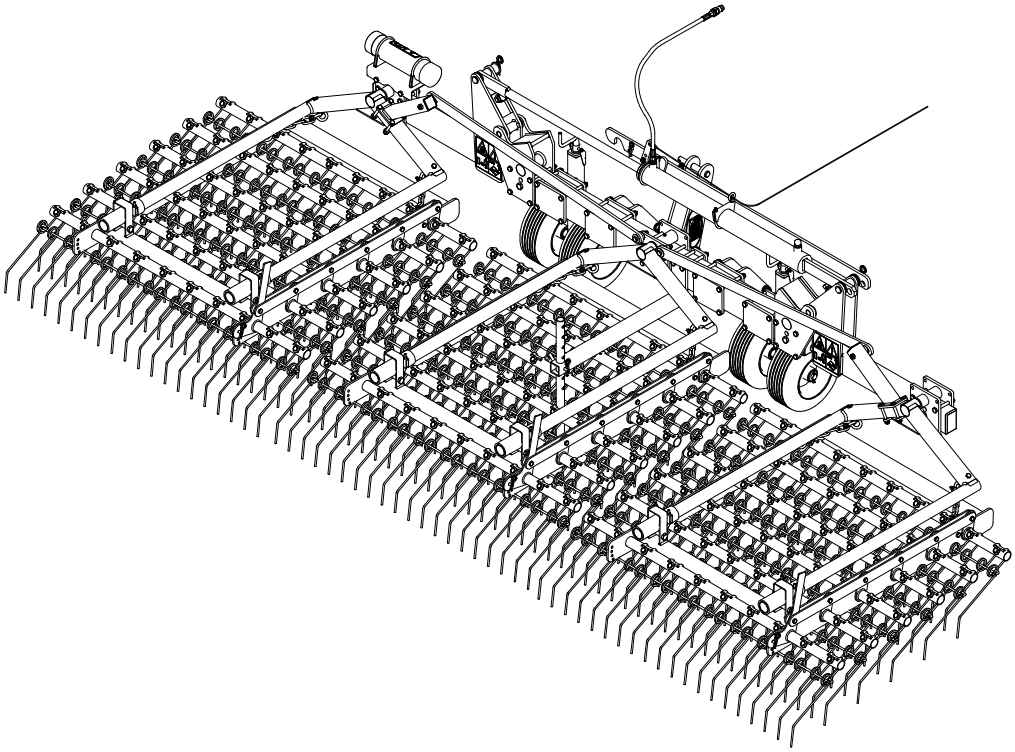
TM

Serial number:

Translation of the original operating instructions



ATTENTION:
IT IS OF THE UTMOST IMPORTANCE TO READ THIS USER MANUAL CAREFULLY PRIOR TO USING THE VERTI-RAKE IN ORDER TO USE THE MACHINE SAFELY AND TO OBTAIN THE BEST RESULTS.

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FOREWORD

Congratulations on your Verti-Rake purchase! For safe and long-lasting operation of this Verti-Rake, it is necessary to read and to understand this user manual.
It is impossible to work safely with this machine *without* complete knowledge of its content.

The Verti-Rake is not a machine that works independently. It is the user's responsibility to use the correct tractor. The user must also check the tractor/Verti-Rake combination on safety aspects such as noise level, user instructions and risk analysis.

The following pages deal initially with the general safety instructions. Every user should know these safety instructions and apply them. At the end of this page, a registration card is inserted. This registration card should be returned to enable us to deal with potential future claims.

This user manual lists many instructions that are numbered in sequence. You should follow this sequence. A ⚠ is an indication of a safety instruction. A ☞ means a tip and/or note.

All information and technical specifications provided at the moment that this document is published are the most recent ones. Design specifications may be changed without prior notice.

This document is a translation of the original operating instructions.
Upon request, the original operating instructions are available in Dutch.

WARRANTY CONDITIONS

WITH DELIVERY THIS VERTI-RAKE IS GUARANTEED AGAINST MATERIAL DEFECTS. THIS WARRANTY IS VALID FOR A PERIOD OF 12 MONTHS FROM THE PURCHASE DATE.
VERTI-RAKE WARRANTIES ARE SUBJECT TO THE 'GENERAL CONDITIONS FOR SUPPLY OF PLANT AND MACHINERY FOR EXPORT, NUMBER 188' THAT ARE PUBLISHED UNDER THE AUSPICES OF THE UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE.

REGISTRATION CARD

For your own information, fill in the table below:

Serial number machine	
Dealer name	
Date of purchase	
Remarks	

SAFETY INSTRUCTIONS

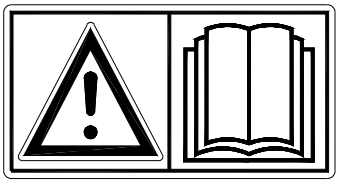

Figure 1

The Verti-Rake is designed for safe use. This can only be achieved if you completely follow the safety instructions described in this manual.
Read and understand (Figure 1) the manual *before* you start using the Verti-Rake.
If the machine is not used as described in this manual, this can result in injuries and/or damage to the Verti-Rake.

1. The user must be an expert in using the machine. The machine should be professionally adjusted for cultivating the subsoil.

   The manufacturer will not accept any liability for unprofessional use and its resulting damage. All risks occurring with this are entirely at the expense of the user.
   Not following the use, maintenance and repair instructions prescribed by the manufacturer is also considered improper/unprofessional use of this machine.

   Inspect the area to be treated *before* using the Verti-Rake.
   Remove loose obstacles and avoid irregularities.

2. The Verti-Rake is manufactured according to the latest technical understanding and is safe to use.

   When careless people use, maintain or repair the machine, danger of injuries to the user *and* to third parties can be the result. **This must be avoided!**

   Always use the Verti-Rake in combination with the correct tractor as described in the technical data.

3. All persons assigned to operate, maintain and repair the Verti-Rake by the owner must completely read and understand the operation manual and in particular the chapter of **Safety Instructions**.

   The user is responsible for a **safe Tractor/Verti-Rake combination**. **This entire combination must be tested** on noise, safety, risk and user friendliness. User instructions should also be drafted.

4. The user is **obliged to check** the Verti-Rake for **visible damage and defects** before using the Verti-Rake.
   Modifications to the Verti-Rake (including its operations) that have a negative impact on safety must be rectified immediately.
   For safety reasons it is in principle not permitted to make changes or adjustments to the Verti-Rake (except those approved by the manufacturer).

If **modifications** to the Verti-Rake have been made, then the current CE marking is cancelled. The person that has made these modifications has to apply for a new **CE marking himself**.

Check the Verti-Rake for loose bolts, nuts and components *before* every operation.

If present, check the hydraulic pipelines regularly and replace these when the hydraulic pipelines are damaged or appear old. The replacing pipelines should comply with the technical requirements of the manufacturer.

If present, you should **always** make the hydraulic installation pressure-free *before* working on this installation.

NEVER use the Verti-Rake in the absence of the safety stickers.

NEVER crawl under the Verti-Rake.
If necessary, tilt the Verti-Rake.

NEVER step off the tractor while the motor is running.

In case of maintenance, adjusting and repairs, it is necessary to block the Verti-Rake in order to prevent sinking away, driving off and/or sliding off.

Always switch off the tractor motor and take the tractor's key out off the ignition in case of maintenance, adjusting and repairs (Figure 2).

Figure 2

With regards to the safety of the machine and the user, use only original Verti-Rake parts for maintenance and repairs.

Only authorised technical personnel may carry out repairs to the **Verti-Rake.**

Keep a record of the repair activities.

5. The general applicable health & safety (Dutch acronym: ARBO) regulations must also be followed in addition to the instructions in this user manual.

   Relevant traffic regulations also apply in case of using public roads.

   Transporting persons is not permitted!

   Do not use the Verti-Rake in the dark, in heavy rain/storm or on slopes with an angle larger than 20 degrees.

6. All persons that are going to operate the Verti-Rake must be familiar with all the functions and control elements of the Verti-Rake *before* starting any work activities.

   Attach the Verti-Rake to the towing vehicle according to the regulations.
   (Danger of injuries!)
   Check whether you have a clear field of vision – both close by and far away – *before* you depart.

   Safety stickers (Figure 2, 3 and 4) with an identical meaning are attached to the sideboards (Figure 5) of the Verti-Rake. These safety stickers must always be clearly visible and legible and must be replaced in case they have become damaged.

   During operation, **NO persons are allowed within the danger zone** of the Verti-Rake, because there is danger of physical injuries caused by flying particles or substances (Figure 3).

Figure 3

Figure 4

Keep a distance of minimum 4 metres (Figure 4)!

Pay attention to the permitted lifting capacity of the towing vehicle.

Dress appropriately. Wear sturdy shoes with steel toecaps, long trousers and tie up long hair. Do not wear loose clothing.

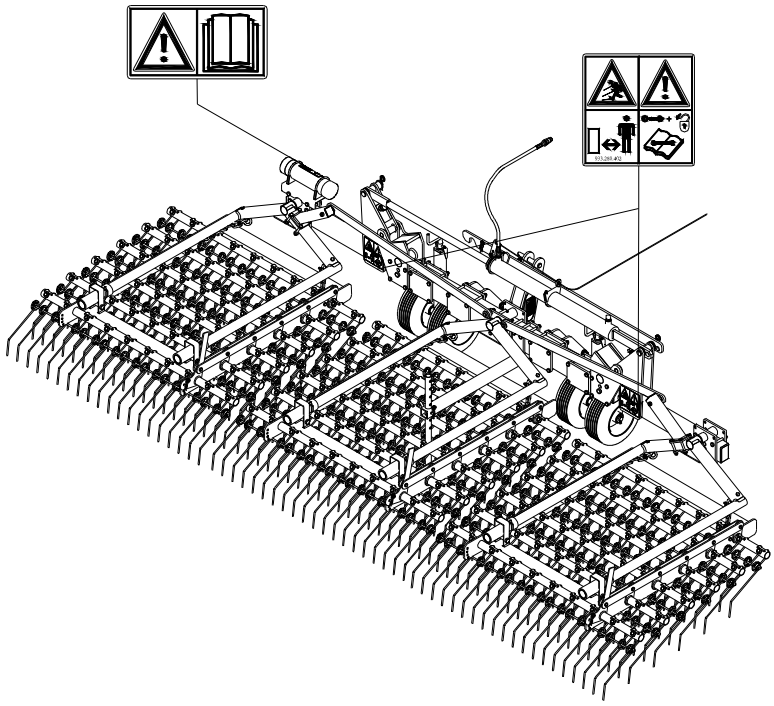

Figure 5

7. Location of the safety stickers (Figure 5)

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1.0 TECHNICAL DATA

Model	4500	6000
Working width	4.5 m (177.2”)	6 m (236”)
Working depth	Surface processing	Surface processing
Speed	Maximum 12 km/h (7.5 mph)	Maximum 12 km/h (7.5 mph)
Weight	550 kg (1213 lbs)	675 kg (1488 lbs)
Recommended tractor	30 HP with minimum lifting capacity of 650 kg (1433 lbs) 1 sincle acting valve	30 HP with minimum lifting capacity of 800 kg (1763.7 lbs)
Maximum capacity (Theoretical at maximum speed of 12 km/h [7.5mph])	54000 m^2/h (58125 ft^2/h)	72000 m^2/h (7750001 ft^2/h)
Distance between pins	15 mm (0.6”)	15 mm (0.6”)
Transport dimensions	L x W x H 1810x2800x1850 mm 71.3”x102.5”x72.8”	L x W x H 1810x2995x2600 mm 71.7” x 118” x 102.4”
Three-point connection	Cat. 1-2	Cat. 1-2
Grease	EP 2	EP 2
Standard components	Running wheels adjustable in height Verti-Rake pin section Toolbox including a manual	Running wheels adjustable in height Verti-Rake pin section Toolbox including a manual
Optional	Brush set	Brush set

2.0 FIRST INSTALLATION – TAKING THE MACHINE OFF THE PALLET

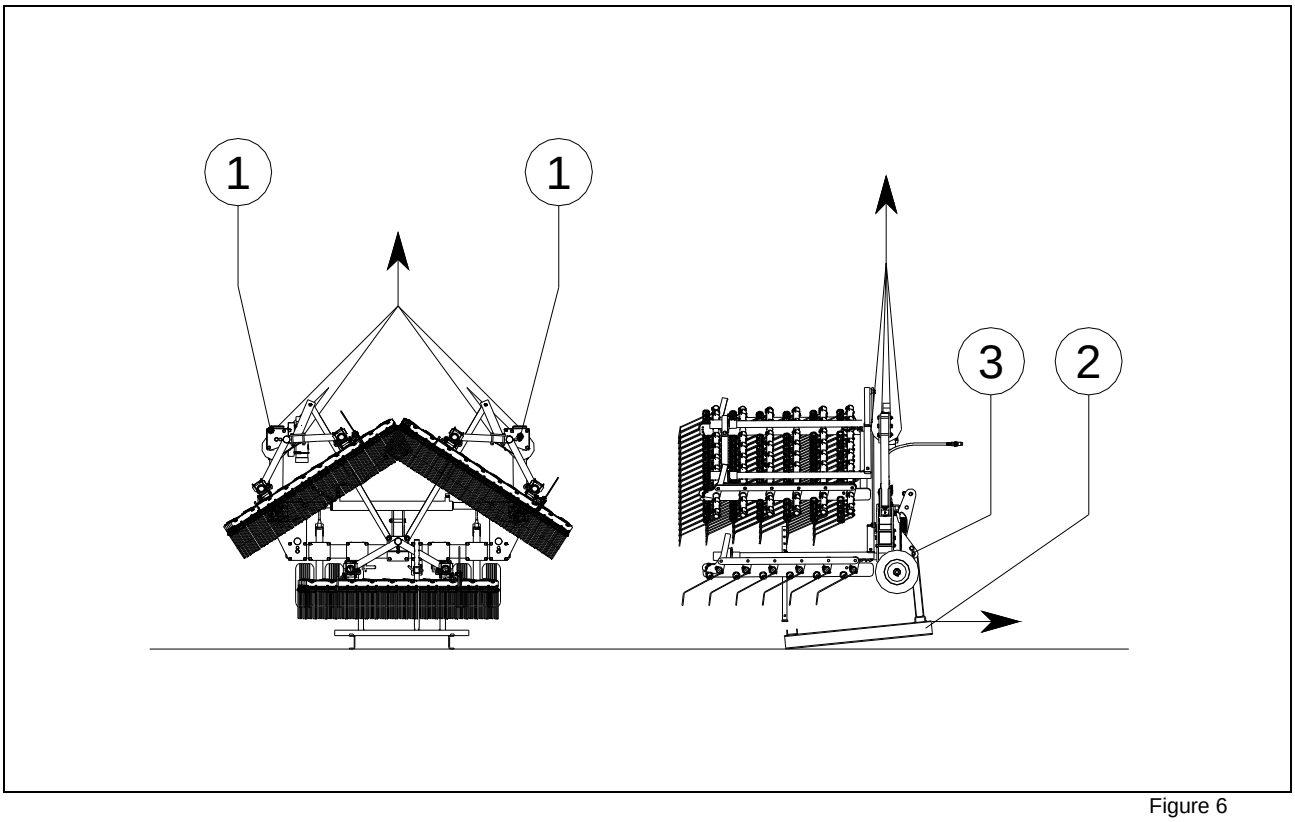

Figure 6

The machine is placed vertically on the pallet. To remove the pallet and to place the machine horizontally on the ground, you take the following steps (see Figure 6):

⚠ **NEVER crawl under the machine!**

1. Attach a cable to the lifting eye (1).

⚠ **Make sure that the cable/crane/lift can hoist minimum VR4500 825 kg (1819 lbs)/ VR6000 1000 kg 2205 LBS**

2. Lift the machine including the pallet approx. 50 mm (2") off the ground.
3. Take care that the machine is standing on the edge of the pallet (2).
4. Lower the machine controlled and calmly until it stands completely on the subsoil.

⚠ **Watch out: Keep your distance; the machine can slide!**

5. Dismantle the top rod pin (3) and let the pallet (2) rotate carefully around the 3-point pins (4) until it stands on the subsoil.
6. Remove the bottom 3-point pins (4) and remove the pallet (2).
7. Connect the machine to the tractor (please refer to Chapter 4.0).

⚠ **Use the proper tractor (please refer to the specifications).**

⚠ **Turn off the tractor and secure the tractor/Verti-Rake combination against driving off and/or sliding off.**

3.0 LIST OF GENERAL COMPONENTS

Figure 7 shows several important components:

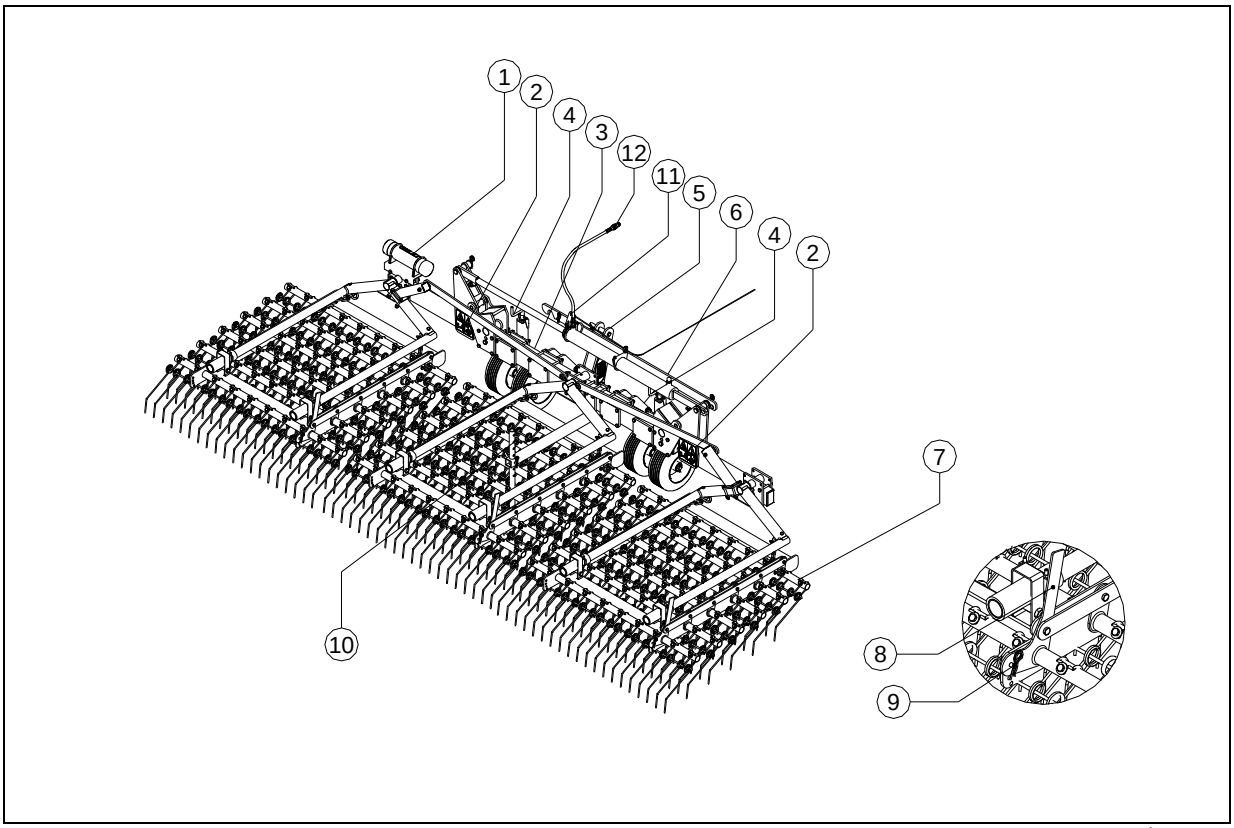

Figure 7

1. Safety sticker 900.280.402; first read the user manual / toolbox including a manual before using it.
2. Safety sticker 933.280.402; keep a minimum distance of 4 metres from the machine. Stop the motor if repair or adjustment is needed. Watch out for flying particles and substances!

⚠ **All the safety stickers should be on the machine at all times and should be understood.**

3. The serial number is located at the front side of the machine.
4. Spindles for setting the working depth
5. Upper 3-point connection
6. Bottom 3-point connection
7. Rake section
8. Handle for angle adjustment of the teeth
9. Fixing pin for angle adjustment of the teeth
10. jack for parking
11. Lock system for transport
12. Hydraulic connection

4.0 ATTACHING THE MACHINE TO THE TRACTOR

Checking procedure before starting to attach the Verti-Rake.

- Check the Verti-Rake for visually discernable damage and repair this if safe operation of the machine is no longer guaranteed.
- Check whether all the nuts and bolts are tight.
- Check whether all safety stickers are present on the machine and are not damaged.
  NEVER use the machine without these items.

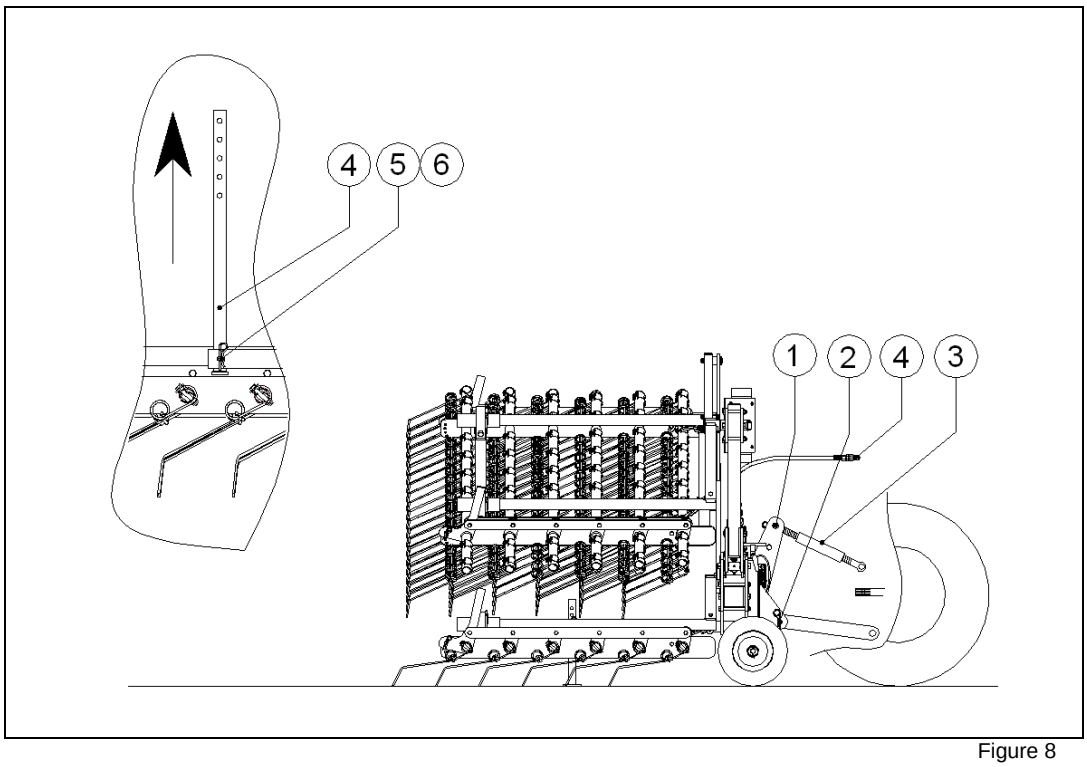

Figure 8

The Verti-Rake can be attached to the tractor by means of the 3-point attachment.

The procedure is as follows (see Figure 8):

1. Remove the 3-point pins (1 and 2).
2. Drive the tractor carefully backwards so that the lower connecting arms can be attached to the frame.

⚠ **Make sure that the tractor is blocked well and cannot move on its own accord!**

⚠ **Switch off the tractor before descending!**

3. Connect the lower connecting arms to the 3-point pins (2) and secure these with the supplied locking pins.
4. Set the stabilizer of the tractor to 100 mm lateral stroke.
5. Mount the top rod of your tractor and turn it outward until it reaches the same height as the 3-point stop connection (3) of the Verti-Rake.
6. Connect the top rod (3) to the frame with the pin (1); secure the pin (1) with the supplied locking pin.
7. Turn the top rod (3) inwards so that it becomes pressurized.
8. Connect the hydraulic hose 4 to the tractor

⚠ **Make sure that all the securing pins are locked!**

9. Start the tractor and lift the Verti-Rake off the subsoil.
10. Move the jack 5 in the top position and lock this with pin 6 and springpin 7

5.0 SETTING THE OPERATIONAL AGGRESSIVENESS

The aggressiveness can be set in two ways:

1. Adjusting the running wheels by turning the spindles (4) (Figure 7) at the front side of the machine:
   Set both sides of the machine at the same height so that it is possible to process the field as evenly as possible.
2. Adjusting the angle of the pins:
   Remove the locking pin and fixing pin (9). Adjust the angle of the teeth by moving the handle (8) forwards or backwards. Subsequently, place the fixing pin and secure this with the locking pin.

NEVER adjust the machine in such a way that it could damage the subsoil or the machine.

⚠ **IMPORTANT! First check the working depth on the subsoil statically *before* using the machine!**

6.0 TRANSPORTING THE VERTI-RAKE

The user is responsible for transporting the Verti-Rake in back of the tractor over public roads. Verify the national legislation regarding the regulations.
On open fields while the machine is raised, the maximum permitted speed is 12 km/h (7.5 mph) due to the weight of the Verti-Rake.
A higher speed can be dangerous for the driver and/or the public and can even damage the machine.

⚠ **When the machine is raised off the ground, the front axle of the tractor has to support minimum 20% of its weight.**

⚠ **Always fold the machine before transporting**

7.0 DRIVING SPEED

The driving speed is limited to 12 km/h (7.5mph).
It is NOT recommended to drive faster due to the fact that excessive wear & tear and damage can occur to the machine and to the subsoil.

8.0 USING THE VERTI-RAKE

Before using the Verti-Rake in a location, you should check the following items:

1. Are there loose objects in the field? First remove these objects.
2. Are there slopes? The maximum slope is 20 degrees for the Verti-Rake.
3. Always go from top to bottom.
   Is there danger of flying objects (e.g., golf balls) that distract the attention of the driver? If so, the Verti-Rake **CANNOT** be used.
4. Is there danger of sinking/sliding away? If so, postpone the processing until conditions improve.
5. A field can be worked several times in the same or different directions in order to obtain better processing.
6. Do not make sharp bends and preferably, drive in straight lines; otherwise you might damage the machine and the subsoil.

7. Do not set the machine in a too aggressive mode; this can lead to undesired damage of the subsoil and additional wear and tear of the teeth.

9.0 START/STOP PROCEDURE

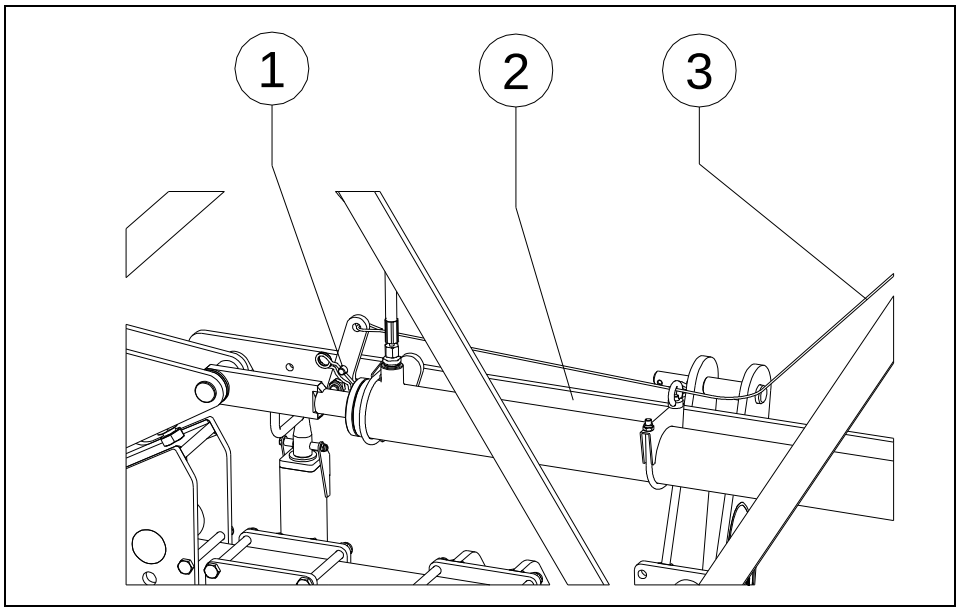

fig 10

The start procedure is **VERY** important. If this procedure is not executed as described below, serious damage to the subsoil could be the result.

The start procedure is as follows:

1. Check the Verti-Rake for loose components and look whether all components function properly.

⚠ **If loose components are observed or components do not function properly, the problems must be solved *before* using the Verti-Rake!**

2. Drive to the spot where the processing should take place.
3. Remove pin 1 of the lock system
4. Turn the top rod (3) inwards so that the machine stands perpendicular to the subsoil (see Figure 8).
5. Unlock the lock system 2 by pulling the rope 3 see fig 10
6. Activate the hydraulic system to lower the outer sections.
7. Set the level of aggressiveness of the machine statically as described in Chapter 5.0.

⚠ **Make sure that the tractor is blocked well and cannot move on its own accord! Switch off the tractor before descending!**

8. Let the machine drop until the machine hovers above the ground at approx. 50 mm.
9. Engage the tractor in the correct gear.
10. Set the tractor in forward motion and let the Verti-Rake sink onto the pre-adjusted bearing rollers with a smooth movement.
11. Increase the driving speed to maximum 12 km/h (7.5 mph).

Stopping occurs as follows:

1. While driving, lift the machine with a smooth movement.
2. Drive to the next location and start the operation as described above.

10.0 DETACHING THE VERTI-RAKE

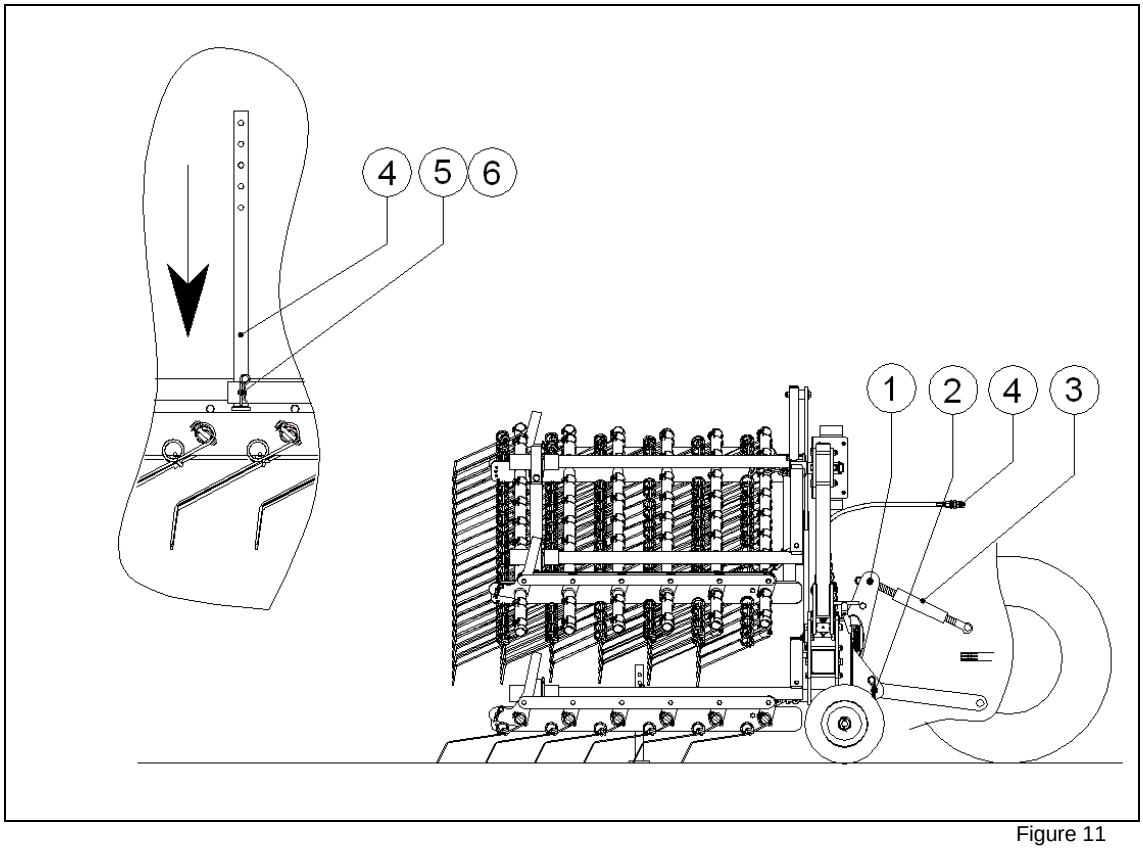

Figure 11

The machine can be detached from the tractor in the following manner (See Figure 11):

1. Drive the Verti-Rake to a parking area with a firm/flat surface.

⚠ **Make sure that the tractor is blocked well and cannot move on its own accord!**

⚠ **Switch off the tractor before descending!**

2. Slide stamp 4 down and secure with pin 5 and lock pin 6.
3. Carefully drop the Verti-Rake to the subsoil.
4. Lock hydraulic system with pin 1 (see fig 10)
5. Disconect hydraulic hose 4 of the tractor
6. Release the top rod (3).
7. Take the locking pin out of the pin (1) and pull the pin out of the top rod connection.
8. Pull the locking pins out of the pins (2) and remove the pins.

⚠ **Make sure that the Verti-Rake stands stable and cannot roll away and/or slide off!**

9. Start the tractor and drive off.

11.0 TROUBLE SHOOTING (PROBLEM ANALYSIS)

Problem	Possible cause	Solution
Too little cleaning	Working depth is adjusted too shallow	Adjust the machine to more depth
	Subsoil is too hard	Drive along a few more steps while adjusting to more depth every time
	Teeth are not sufficiently aggressive	Set the machine to a more aggressive angle
Sloppy image of the field after processing	Machine is adjusted too aggressively	Adjust the machine to a mode that is less aggressive
	Subsoil is too wet	Wait for better conditions

12.0 EU DECLARATION

We – Redexim BV, Utrechtseweg 127, 3702 AC Zeist, Holland – declare entirely under our own responsibility that the product

VERTI-RAKE with a machine number as indicated on the machine and indicated in this manual

to which this declaration relates is according to the stipulation of the 2006/42/EC directive for machines.

Zeist, 01/10/09

A.C. Bos
Manager Operations & Logistics
Redexim Holland

13.0 MAINTENANCE

Time schedule	Check/Grease point	Method
Before **every** use	Check for loose bolts/nuts	Tighten loose bolts/nuts with the correct tightening moment
	Check hydraulic system	If needed repair
	Presence and readability of the safety stickers (Please refer to Figure 5)	Replace these if not present or damaged

14.0 CHANGING THE SPRING PINS

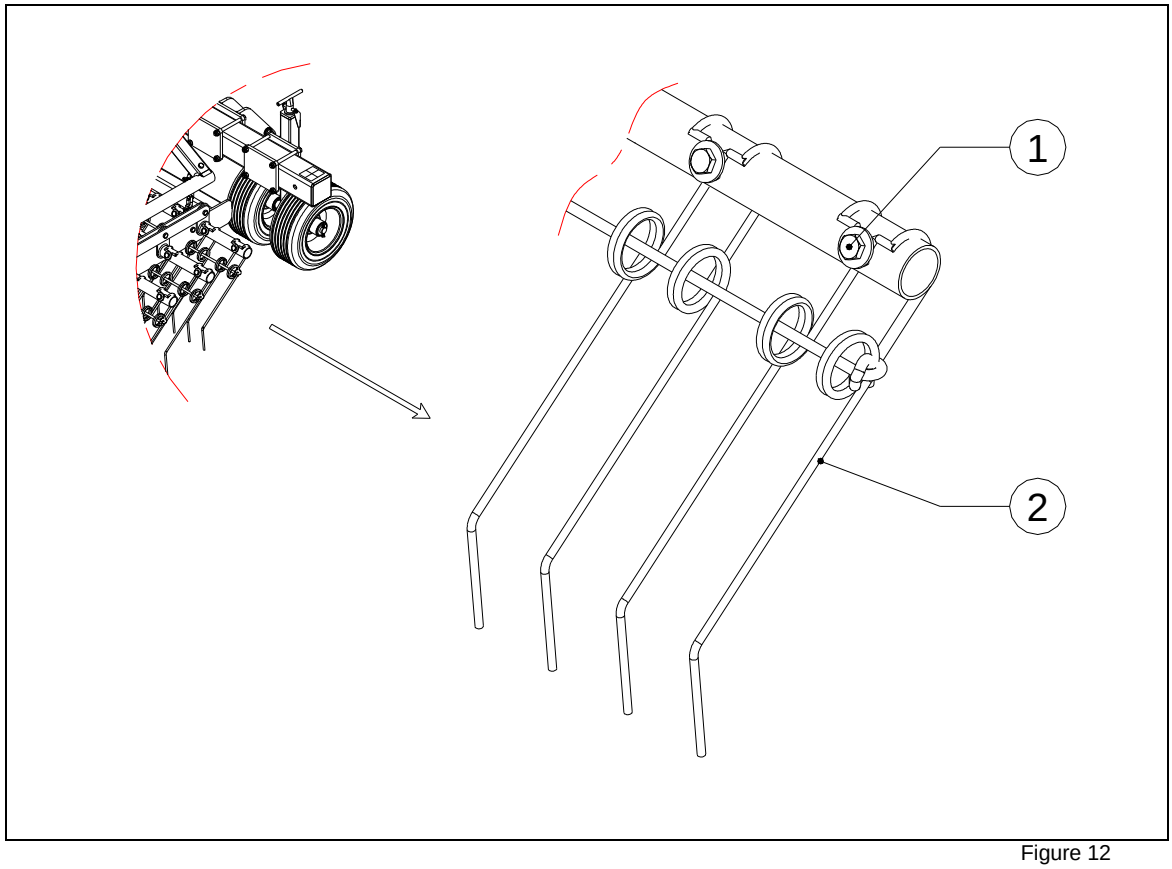

Figure 12

A rake is mounted on the Verti-Rake. This rake consists of a tube frame equipped with spring pins.
Depending on the use of the machine, wear & tear or breaking of the spring pins can occur. This might mean that you will have to replace the spring pins at a certain point.

Replacing the spring pins is done as follows (see Figure 12):

⚠ **Make sure that the Verti-Rake is blocked well and cannot move on its own accord!**

1. Loosen bolt(s) and nut(s) (1) a single turn.
2. Remove the spring pin(s) (2) replace these with new ones.
3. Tighten bolt(s) and nut(s) (1).

15.0 OPTIONAL: BRUSH SECTION

The Verti-Rake is also available with an optional brush section (Figure 13).
A brush section can be mounted on the machine instead of the rake section.

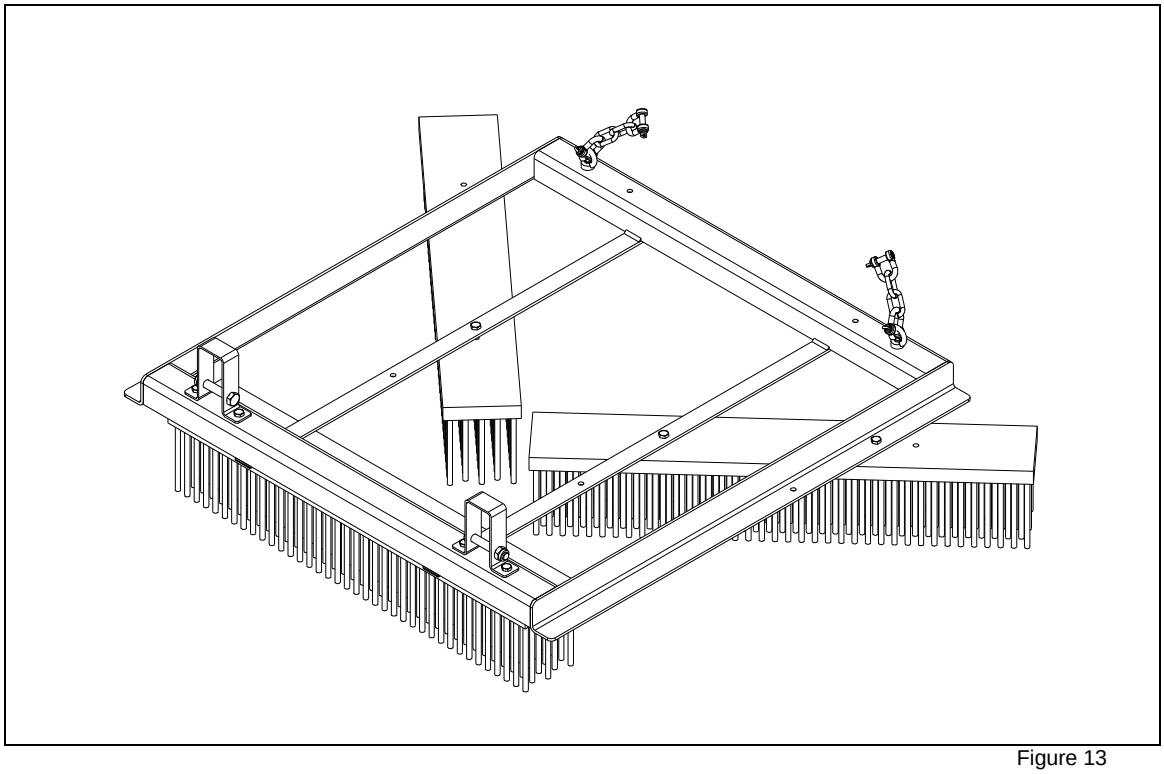

Figure 13